

SMC Tailoring SMC-T-007
15 May 2015

Supersedes:
New issue



Air Force Space Command

SPACE AND MISSILE SYSTEMS CENTER TAILORING

TAILORING OF EIA-649-1: DEFINITION OF MAJOR (CLASS I) ENGINEERING CHANGE PROPOSAL

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FOREWORD

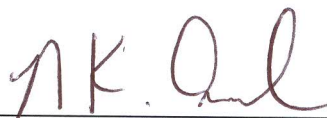
1. This tailoring document defines the Government's requirements and expectations for contractor performance in defense system acquisitions and technology developments.
2. This new-issue SMC tailoring comprises the text of The Aerospace Corporation report number TOR-2015-01904, entitled *Tailoring of ELA-649-1: Definition of Major (Class I) Engineering Change Proposal*.
3. Beneficial comments (recommendations, changes, additions, deletions, etc.) and any pertinent data that may be of use in improving this document should be forwarded to the following addressee using the Standardization Document Improvement Proposal appearing at the end of this document or by letter:

Division Chief, SMC/ENE
SPACE AND MISSILE SYSTEMS CENTER
Air Force Space Command
483 N. Aviation Blvd.
El Segundo, CA 90245

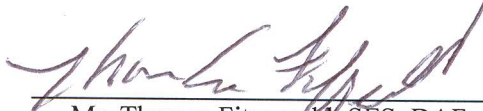
4. This tailoring document has been approved for use on all Space and Missile Systems Center/Air Force Program Executive Office - Space development, acquisition, and sustainment contracts.



Mr. David Davis, GG-15, DAF
SMC Chief Systems Engineer



Mr. Nick Awwad, GG-15, DAF
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Mr. Thomas Fitzgerald, SES, DAF
SMC Director of Engineering

Tailoring of EIA-649-1: Definition of Major (Class I) ECP.

1. Intent of this Tailoring Document

This tailoring document remedies a requirements gap in the industry consensus standard, EIA-649-1: 2015. Specifically, this tailoring provides a contractually compliant definition for Major (Class I) Engineering Change Proposal (ECP). The goal of this tailoring is to ensure that the standard is complete and stands on its own.

The terms ‘major change’ and ‘minor change’ are used in EIA-649-1 to describe categorization of change data to be provided to the acquirer. These terms are used in

- Clause 3.1.1, Monitoring Configuration Management Procedures, implementing ANSI/EIA-649 Principle CMP-6, cites minor change/variance and minor change/variance as two potential metrics.
- Clause 3.3.1, Engineering Change Proposal (ECP), implementing ANSI/EIA-649 Principles CCM-3, 3, 4, and 53, provides requirements for ECPs to indicate the class of ECP, viz. Major and Minor.
- Clause 3.3.2 requires the use of the contents of an ECP form (DD 1692 or equivalent) to document engineering changes including the class of ECP (box 5 of DD 1692). Clause 3.3.2 also provides the relationship between major/minor change categories and Class I/II categories with major change being the same as a Class I change and minor change being the same as Class II change.

The definition for Major (Class I) Change is not provided in EIA-649-1, but reference is made to DD Form 1692 where the definition for Major (Class I) ECP is in the instructions to the form. Minor (Class II) is defined within the standard as changes that do not meet the criteria of Major (Class I), and are administrative or documentation clarifications and corrections.

For that reason, this tailoring document establishes contractually compliant definitions to supplement the existing text of EIA-649-1 using the Major (Class I) ECP definition from the latest version of DD 1692 as the basis.

2. Context

1.1. EIA-649-B, *Configuration Management Standard*

EIA-649-B is the DOD-adopted industry consensus standard for configuration management.¹ This document addresses the five functions of configuration management (CM). For each CM function, a set of principles have been identified that describe the steps required for implementing the CM function.

The purpose of EIA-649-B is to help a supplier develop a CM checklist that is based on an acquirer’s 649-based CM plan, and to help a supplier develop an enterprise or project-level CM requirements document.

EIA-649-B is not suitable for use on contract because it does not contain proper language – shall, should, may or will² – that defines requirements of a standard in a contractual environment. The contents of EIA-649-B are not stated as formal requirements. The term, shall, is only used as part of the definition for ‘requirement’ and in the SAE International boilerplate.

¹ EIA-649-B, *Notice, Adoption – Tier 1*. 04-Mar-2015. http://quicksearch.dla.mil/qsDocDetails.aspx?ident_number=280799

² Federal Acquisition Regulations. <http://www.acquisition.gov/far/>

1.2. EIA-649-1, *Configuration Management Requirements for Defense Contracts*

EIA-649-1 was sponsored by the Defense Standardization Council as part of the DOD initiative to revive key standards on DOD contracts. A joint service working group generated the standard with industry collaboration under the SAE International Aerospace Council's G-33 committee for formal industry balloting prior to publication of the standard. The joint service working group was responsible for updating the associated Data Item Descriptions. EIA-649-1 has been adopted by DOD.³

This document contains formal requirements for execution of CM on government contracts using contractually-compliant language. It is organized by the five CM key functions. Each key CM function identifies the associated EIA-649-B principles, which are copied verbatim from EIA-649-B into EIA-649-1, allowing 649-1 to be used as a stand-alone document. Specifically, use of EIA-649-1 on contract does not require the simultaneous use of EIA-649-B.

The stated purpose of EIA-649-1 is to specify CM requirements for an acquirer to use on contract, and for suppliers to comply with and flow to sub-suppliers. This document is suitable for use on contract because it provides requirements using contractually compliant language, specifically the term "shall."

³ EIA-649-1, *Notice, Adoption – Tier 1*. 04-Mar-2015. http://quicksearch.dla.mil/qsDocDetails.aspx?ident_number=280800

3. Tailoring of EIA-649-1

3.1. EIA-649-1 Tailoring Instructions

The requirements in this document shall be used in conjunction with EIA-649-1: 2015 on contract.

The requirements of this document shall prevail in the event of conflict between this document and EIA-649-B, EIA-649-1 or DD 1692.

3.2. EIA-649-1 Tailoring Language

The following new text shall modify EIA-649-1, replacing clause 3.3.1.8, Minor (Class II) ECP:

3.3.1.8. Classes of Engineering Change Proposals⁴

3.3.1.8.1. Major (Class I) ECP⁵

An ECP shall be classified as a Major (Class I) change when ECPs have any combination of the following criteria:

- a. A change that affects specified and approved requirements including safety, reliability supportability and quantitative requirements that result in product attributes that would be outside specified limits or specified tolerances.
- b. A change that affects any approved acquisition baseline (i.e., Functional, Allocated or Product Baselines).
- c. A change that affects compatibility with interfacing products (including such products as test equipment, support equipment, software, firmware, and products furnished by an Acquirer) or that affects one or more of the following:
 1. Delivered operation or servicing instructions
 2. Required calibration to the extent that product identification should be changed.
 3. Interchangeability or substitutability of replaceable products, assemblies, or components.
 4. User skills or user physical attributes.
 5. Operator or maintenance training.
 6. Requires retrofit of delivered products (e.g., by product recall, modification kit installation, attrition, replacement during maintenance using modified spares).
 7. Performance.
 8. Maintainability, durability or survivability.
 9. Weight, balance, moment of inertia.
 10. Electromagnetic characteristics.
 11. Impact to logistical support requirements such as training, technical or operational manuals, spares, maintenance procedures or equipment, etc.
 12. Re-qualification of the item.
 13. Domain certification (e.g., airworthiness, sea worthiness, etc.).
 14. Source (supplier of an item) listed on a Source Control Drawing (SCD).

⁴ Change to title of section 3.3.1.8, "Minor (Class II ECP)", to accommodate both Major and Minor ECP definitions with unique and co-located requirements.

⁵ Instructions for Preparation of Engineering Change Proposals Utilizing DD Form 1692. Block 5. Class of ECP. DD Form 1692. *Engineering Change Proposal (ECP)*. 2015. Note: Verbatim except **bolded text** has been added to form proper requirements language.

15. Biomedical factors or human factors engineering.
 16. Personnel manning.
 17. Corrects deficiencies.
 18. Adds or modifies interface or interoperability requirements.
 19. Changes the operational capabilities or logistics supportability of the system or item and the change is significant and measurably changes the effectiveness.
 20. Effects life cycle costs/savings.
 21. Prevents slippage in an approved production schedule.
- d. A change that does not meet the above criteria but does impact cost/price/delivery to customer(s), including incentives and fees, guarantees, warranties, and contracted deliveries or milestones.

3.3.1.8.2. Minor (Class II) ECP⁶

The Supplier shall assign an ECP classification of a Minor (Class II) to an ECP whose engineering change does not meet the criteria for a Major (Class I) change. Minor (Class II) ECPs are limited to administrative or documentation clarifications and corrections.

4. Applicable Documents

The following documents form a part of this document to the extent specified herein. Unless otherwise specified the issues of these documents are those cited in the solicitation or contract.

- SAE International. Configuration Management Standard. Report Number EIA-649 Revision B. April 2011.
- SAE International. Configuration Management Requirements for Defense Contracts. Report number EIA-649-1. November 2014.
- DD Form 1692. Engineering Change Proposal (ECP). 2015.

⁶ Original section 3.3.1.8, verbatim, renumbered to section 3.3.1.8.2. Reprinted with permission from EIA-649-1 Copyright © 2014 SAE International. Further use or distribution is not permitted without prior permission from SAE.

SMC Standard Improvement Proposal

INSTRUCTIONS

1. Complete blocks 1 through 7. All blocks must be completed.
2. Send to the Preparing Activity specified in block 8.

NOTE: Do not use this form to request copies of documents, or to request waivers, or clarification of requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements. Comments submitted on this form do not constitute a commitment by the Preparing Activity to implement the suggestion; the Preparing Authority will coordinate a review of the comment and provide disposition to the comment submitter specified in Block 6.

SMC STANDARD CHANGE RECOMMENDATION:

1. Document Number

SMC-T-007

2. Document Date

2015

3. Document Title

Definition of Major (Class I) Engineering Change Proposal

4. Nature of Change

(Identify paragraph number; include proposed revision language and supporting data. Attach extra sheets as needed.)

5. Reason for Recommendation

6. Submitter Information

a. Name

b. Organization

c. Address

d. Telephone

e. E-mail address

7. Date Submitted

8. Preparing Activity

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AIR FORCE SPACE COMMAND
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El Segundo, CA 91245
Attention: SMC/EN